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<120> Novel Methods for Therapeutic Vaccination

<130> 3631-109P

<140> US 09/806,703

<141> 2001-04-04

<150> PCT/DK99/00525

<151> 1999-10-05

<150> DK 1998 01261

<151> 1998-10-05

<150> DK 60/105,011

<151> 1998-10-20

<160> 33

<170> PatentIn version 3.0

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<220>

<221> misc_feature

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144

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Leu Pro Ser Ile Pro Val His Pro Ile Gly Tyr Tyr Asp Ala Gln Lys
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Leu Leu Glu Lys Met Gly Gly Ser Ala Pro Pro Asp Ser Ser Trp Arg
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Gly Ser Leu Lys Val Pro Tyr Asn Val Gly Pro Gly Phe Thr Gly Asn
325 330 335

Phe Ser Thr Gln Lys Val Lys Met His Ile His Ser Thr Asn Glu Val
340 345 350

Thr Arg Ile Tyr Asn Val Ile Gly Thr Leu Arg Gly Ala Val Glu Pro
355 360 365

Asp Arg Tyr Val Ile Leu Gly Gly His Arg Asp Ser Trp Val Phe Gly

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Tyr Ile Asn Ala Asp Ser Ser Ile Glu Gly Asn Tyr Thr Leu Arg Val
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Gly Ile Ala Ser Gly Arg Ala Arg Tyr Thr Lys Asn Trp Glu Thr Asn
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580 585 590

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Tyr Ser Val Ser Phe Asp Ser Leu Phe Ser Ala Val Lys Asn Phe Thr
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Asn Pro Ile Val Leu Arg Met Met Asn Asp Gln Leu Met Phe Leu Glu
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675 680 685

His Val Ile Tyr Ala Pro Ser Ser His Asn Lys Tyr Ala Gly Glu Ser
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180	185	190	
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gct gcc ggc tgc acg ggc ccc aag cac tct	gac tgc ctg gcc tgc ctc	768	
Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp	Cys Leu Ala Cys Leu		
245	250	255	
cac ttc aac cac agt ggc atc tgt gag ctg	cac tgc cca gcc ctg gtc	816	
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ggc atc tgg atc cct gat ggg gag aat gtg aaa att cca gtc gcc atc Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile 740 745 750	2256
aaa gtg ttg agg gaa aac aca tcc ccc aaa gcc aac aaa gaa atc tta Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu 755 760 765	2304
gac gaa gca tac gtg atg gct ggt gtg ggc tcc cca tat gtc tcc cgc Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg 770 775 780	2352
ctt ctg ggc atc tgc ctg aca tcc acg gtg cag ctg gtg aca cag ctt Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu 785 790 795 800	2400
atg ccc tat ggc tgc ctc tta gac cat gtc cgg gaa aac cgc gga cgc Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg Glu Asn Arg Gly Arg 805 810 815	2448
ctg ggc tcc cag gac ctg ctg aac tgg tgt atg cag att gcc aag ggg Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Met Gln Ile Ala Lys Gly 820 825 830	2496
atg agc tac ctg gag gat gtg cgg ctc gta cac agg gac ttg gcc gct Met Ser Tyr Leu Glu Asp Val Arg Leu Val His Arg Asp Leu Ala Ala 835 840 845	2544
cgg aac gtg ctg gtc aag agt ccc aac cat gtc aaa att aca gac ttc Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp Phe 850 855 860	2592
ggg ctg gct cgg ctg gac att gac gag aca gag tac cat gca gat Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr Glu Tyr His Ala Asp 865 870 875 880	2640
ggg ggc aag gtg ccc atc aag tgg atg gcg ctg gag tcc att ctc cgc Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu Arg 885 890 895	2688
cgg cgg ttc acc cac cag agt gat gtg tgg agt tat ggt gtg act gtg Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Val 900 905 910	2736
tgg gag ctg atg act ttt ggg gcc aaa cct tac gat ggg atc cca gcc Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr Asp Gly Ile Pro Ala 915 920 925	2784
cgg gag atc cct gac ctg ctg gaa aag ggg gag cgg ctg ccc cag ccc Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro 930 935 940	2832
ccc atc tgc acc att gat gtc tac atg atc atg gtc aaa tgt tgg atg	2880

Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp Met			
945	950	955	960
att gac tct gaa tgt cgg cca aga ttc cgg gag ttg gtg tct gaa ttc			2928
Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu Leu Val Ser Glu Phe			
965	970	975	
tcc cgc atg gcc agg gac ccc cag cgc ttt gtg gtc atc cag aat gag			2976
Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val Val Ile Gln Asn Glu			
980	985	990	
gac ttg ggc cca gcc agt ccc ttg gac agc acc ttc tac cgc tca ctg			3024
Asp Leu Gly Pro Ala Ser Pro Leu Asp Ser Thr Phe Tyr Arg Ser Leu			
995	1000	1005	
ctg gag gac gat gac atg ggg gac ctg gtg gat gct gag gag tat			3069
Leu Glu Asp Asp Asp Met Gly Asp Leu Val Asp Ala Glu Glu Tyr			
1010	1015	1020	
ctg gta ccc cag cag ggc ttc ttc tgt cca gac cct gcc ccg ggc			3114
Leu Val Pro Gln Gln Gly Phe Phe Cys Pro Asp Pro Ala Pro Gly			
1025	1030	1035	
gct ggg ggc atg gtc cac cac agg cac cgc agc tca tct acc agg			3159
Ala Gly Gly Met Val His His Arg His Arg Ser Ser Ser Thr Arg			
1040	1045	1050	
agt ggc ggt ggg gac ctg aca cta ggg ctg gag ccc tct gaa gag			3204
Ser Gly Gly Asp Leu Thr Leu Gly Leu Glu Pro Ser Glu Glu			
1055	1060	1065	
gag gcc ccc agg tct cca ctg gca ccc tcc gaa ggg gct ggc tcc			3249
Glu Ala Pro Arg Ser Pro Leu Ala Pro Ser Glu Gly Ala Gly Ser			
1070	1075	1080	
gat gta ttt gat ggt gac ctg gga atg ggg gca gcc aag ggg ctg			3294
Asp Val Phe Asp Gly Asp Leu Gly Met Gly Ala Ala Lys Gly Leu			
1085	1090	1095	
caa agc ctc ccc aca cat gac ccc agc cct cta cag cggt tac agt			3339
Gln Ser Leu Pro Thr His Asp Pro Ser Pro Leu Gln Arg Tyr Ser			
1100	1105	1110	
gag gac ccc aca gta ccc ctg ccc tct gag act gat ggc tac gtt			3384
Glu Asp Pro Thr Val Pro Leu Pro Ser Glu Thr Asp Gly Tyr Val			
1115	1120	1125	
gcc ccc ctg acc tgc agc ccc cag cct gaa tat gtg aac cag cca			3429
Ala Pro Leu Thr Cys Ser Pro Gln Pro Glu Tyr Val Asn Gln Pro			
1130	1135	1140	
gat gtt cgg ccc cag ccc cct tcg ccc cga gag ggc cct ctg cct			3474
Asp Val Arg Pro Gln Pro Pro Ser Pro Arg Glu Gly Pro Leu Pro			
1145	1150	1155	
gct gcc cga cct gct ggt gcc act ctg gaa agg gcc aag act ctc			3519
Ala Ala Arg Pro Ala Gly Ala Thr Leu Glu Arg Ala Lys Thr Leu			

1160	1165	1170	
tcc cca ggg aag aat ggg gtc	gtc aaa gac gtt ttt	gcc ttt ggg	3564
Ser Pro Gly Lys Asn Gly Val	Val Lys Asp Val Phe	Ala Phe Gly	
1175	1180	1185	
ggt gcc gtg gag aac ccc gag	tac ttg aca ccc cag	gga gga gct	3609
Gly Ala Val Glu Asn Pro Glu	Tyr Leu Thr Pro Gln	Gly Gly Ala	
1190	1195	1200	
gcc cct cag ccc cac cct cct	cct gcc ttc agc cca	gcc ttc gac	3654
Ala Pro Gln Pro His Pro Pro	Pro Ala Phe Ser Pro	Ala Phe Asp	
1205	1210	1215	
aac ctc tat tac tgg gac cag	gac cca cca gag cg	ggg gct cca	3699
Asn Leu Tyr Tyr Trp Asp Gln	Asp Pro Pro Glu Arg	Gly Ala Pro	
1220	1225	1230	
ccc agc acc ttc aaa ggg aca	cct acg gca gag aac	cca gag tac	3744
Pro Ser Thr Phe Lys Gly Thr	Pro Thr Ala Glu Asn	Pro Glu Tyr	
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Leu Gly Leu Asp Val Pro Val			
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 <213> Homo sapiens

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Leu Arg Leu Pro Ala Ser Pro Glu Thr His Leu Asp Met Leu Arg His
 35 40 45

Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu Leu Thr Tyr
 50 55 60

Leu Pro Thr Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile Gln Glu Val
 65 70 75 80

Gln Gly Tyr Val Leu Ile Ala His Asn Gln Val Arg Gln Val Pro Leu
 85 90 95

Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu Asp Asn Tyr
100 105 110

Ala Leu Ala Val Leu Asp Asn Gly Asp Pro Leu Asn Asn Thr Thr Pro
115 120 125

Val Thr Gly Ala Ser Pro Gly Gly Leu Arg Glu Leu Gln Leu Arg Ser
130 135 140

Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Gln Arg Asn Pro Gln
145 150 155 160

Leu Cys Tyr Gln Asp Thr Ile Leu Trp Lys Asp Ile Phe His Lys Asn
165 170 175

Asn Gln Leu Ala Leu Thr Leu Ile Asp Thr Asn Arg Ser Arg Ala Cys
180 185 190

His Pro Cys Ser Pro Met Cys Lys Gly Ser Arg Cys Trp Gly Glu Ser
195 200 205

Ser Glu Asp Cys Gln Ser Leu Thr Arg Thr Val Cys Ala Gly Gly Cys
210 215 220

Ala Arg Cys Lys Gly Pro Leu Pro Thr Asp Cys Cys His Glu Gln Cys
225 230 235 240

Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp Cys Leu Ala Cys Leu
245 250 255

His Phe Asn His Ser Gly Ile Cys Glu Leu His Cys Pro Ala Leu Val
260 265 270

Thr Tyr Asn Thr Asp Thr Phe Glu Ser Met Pro Asn Pro Glu Gly Arg
275 280 285

Tyr Thr Phe Gly Ala Ser Cys Val Thr Ala Cys Pro Tyr Asn Tyr Leu
290 295 300

Ser Thr Asp Val Gly Ser Cys Thr Leu Val Cys Pro Leu His Asn Gln
305 310 315 320

Glu Val Thr Ala Glu Asp Gly Thr Gln Arg Cys Glu Lys Cys Ser Lys
325 330 335

Pro Cys Ala Arg Val Cys Tyr Gly Leu Gly Met Glu His Leu Arg Glu
340 345 350

Val Arg Ala Val Thr Ser Ala Asn Ile Gln Glu Phe Ala Gly Cys Lys
355 360 365

Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro Glu Ser Phe Asp Gly Asp
370 375 380

Pro Ala Ser Asn Thr Ala Pro Leu Gln Pro Glu Gln Leu Gln Val Phe
385 390 395 400

Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp Pro
405 410 415

Asp Ser Leu Pro Asp Leu Ser Val Phe Gln Asn Leu Gln Val Ile Arg
420 425 430

Gly Arg Ile Leu His Asn Gly Ala Tyr Ser Leu Thr Leu Gln Gly Leu
435 440 445

Gly Ile Ser Trp Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser Gly
450 455 460

Leu Ala Leu Ile His His Asn Thr His Leu Cys Phe Val His Thr Val
465 470 475 480

Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala Leu Leu His Thr
485 490 495

Ala Asn Arg Pro Glu Asp Glu Cys Val Gly Glu Gly Leu Ala Cys His
500 505 510

Gln Leu Cys Ala Arg Gly His Cys Trp Gly Pro Gly Pro Thr Gln Cys
515 520 525

Val Asn Cys Ser Gln Phe Leu Arg Gly Gln Glu Cys Val Glu Glu Cys
530 535 540

Arg Val Leu Gln Gly Leu Pro Arg Glu Tyr Val Asn Ala Arg His Cys

545 550 555 560

Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn Gly Ser Val Thr Cys
565 570 575

Phe Gly Pro Glu Ala Asp Gln Cys Val Ala Cys Ala His Tyr Lys Asp
580 585 590

Pro Pro Phe Cys Val Ala Arg Cys Pro Ser Gly Val Lys Pro Asp Leu
595 600 605

Ser Tyr Met Pro Ile Trp Lys Phe Pro Asp Glu Glu Gly Ala Cys Gln
610 615 620

Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val Asp Leu Asp Asp Lys
625 630 635 640

Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Leu Thr Ser Ile Val Ser
645 650 655

Ala Val Val Gly Ile Leu Leu Val Val Val Leu Gly Val Val Phe Gly
660 665 670

Ile Leu Ile Lys Arg Arg Gln Gln Lys Ile Arg Lys Tyr Thr Met Arg
675 680 685

Arg Leu Leu Gln Glu Thr Glu Leu Val Glu Pro Leu Thr Pro Ser Gly
690 695 700

Ala Met Pro Asn Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu Leu
705 710 715 720

Arg Lys Val Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys
725 730 735

Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile
740 745 750

Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu
755 760 765

Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg
770 775 780

Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu
785 790 795 800

Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg Glu Asn Arg Gly Arg
805 810 815

Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Met Gln Ile Ala Lys Gly
820 825 830

Met Ser Tyr Leu Glu Asp Val Arg Leu Val His Arg Asp Leu Ala Ala
835 840 845

Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp Phe
850 855 860

Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr Glu Tyr His Ala Asp
865 870 875 880

Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu Arg
885 890 895

Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Val
900 905 910

Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr Asp Gly Ile Pro Ala
915 920 925

Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro
930 935 940

Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp Met
945 950 955 960

Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu Leu Val Ser Glu Phe
965 970 975

Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val Val Ile Gln Asn Glu
980 985 990

Asp Leu Gly Pro Ala Ser Pro Leu Asp Ser Thr Phe Tyr Arg Ser Leu
995 1000 1005

Leu Glu Asp Asp Asp Met Gly Asp Leu Val Asp Ala Glu Glu Tyr
1010 1015 1020

Leu Val Pro Gln Gln Gly Phe Phe Cys Pro Asp Pro Ala Pro Gly
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Ala Gly Gly Met Val His His Arg His Arg Ser Ser Ser Thr Arg
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Ser Gly Gly Gly Asp Leu Thr Leu Gly Leu Glu Pro Ser Glu Glu
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Glu Ala Pro Arg Ser Pro Leu Ala Pro Ser Glu Gly Ala Gly Ser
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Asp Val Phe Asp Gly Asp Leu Gly Met Gly Ala Ala Lys Gly Leu
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Gln Ser Leu Pro Thr His Asp Pro Ser Pro Leu Gln Arg Tyr Ser
1100 1105 1110

Glu Asp Pro Thr Val Pro Leu Pro Ser Glu Thr Asp Gly Tyr Val
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Ala Pro Leu Thr Cys Ser Pro Gln Pro Glu Tyr Val Asn Gln Pro
1130 1135 1140

Asp Val Arg Pro Gln Pro Pro Ser Pro Arg Glu Gly Pro Leu Pro
1145 1150 1155

Ala Ala Arg Pro Ala Gly Ala Thr Leu Glu Arg Ala Lys Thr Leu
1160 1165 1170

Ser Pro Gly Lys Asn Gly Val Val Lys Asp Val Phe Ala Phe Gly
1175 1180 1185

Gly Ala Val Glu Asn Pro Glu Tyr Leu Thr Pro Gln Gly Gly Ala
1190 1195 1200

Ala Pro Gln Pro His Pro Pro Pro Ala Phe Ser Pro Ala Phe Asp
1205 1210 1215

Asn Leu Tyr Tyr Trp Asp Gln Asp Pro Pro Glu Arg Gly Ala Pro
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Val Leu Cys Leu Gln Ala Gln Val Thr Val Gln Ser Ser Pro Asn Phe
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aca cag cat gtg agg gag cag agc ctg gtg acg gat cag ctc agc cgc 144
Thr Gln His Val Arg Glu Gln Ser Leu Val Thr Asp Gln Leu Ser Arg
35 40 45

cgc ctc atc cgg acc tac cag ctc tac agc cgc acc agc ggg aag cac 192
Arg Leu Ile Arg Thr Tyr Gln Leu Tyr Ser Arg Thr Ser Gly Lys His
50 55 60

gtg cag gtc ctg gcc aac aag cgc atc aac gcc atg gca gaa gac gga 240
Val Gln Val Leu Ala Asn Lys Arg Ile Asn Ala Met Ala Glu Asp Gly
65 70 75 80

gac ccc ttc gcg aag ctc att gtg gag acc gat act ttt gga agc aga 288
Asp Pro Phe Ala Lys Leu Ile Val Glu Thr Asp Thr Phe Gly Ser Arg
85 90 95

gtc cga gtt cgc ggc gca gag aca ggt ctc tac atc tgc atg aac aag 336
Val Arg Val Arg Gly Ala Glu Thr Gly Leu Tyr Ile Cys Met Asn Lys
100 105 110

aag ggg aag cta att gcc aag agc aac ggc aaa ggc aag gac tgc gta 384
Lys Gly Lys Leu Ile Ala Lys Ser Asn Gly Lys Gly Lys Asp Cys Val
115 120 125

ttc aca gag atc gtg ctg gag aac aac tac acg gcg ctg cag aac gcc 432
Phe Thr Glu Ile Val Leu Glu Asn Asn Tyr Thr Ala Leu Gln Asn Ala
130 135 140

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aag tac gag ggc tgg tac atg gcc ttt acc cgc aag ggc cgg ccc cgc Lys Tyr Glu Gly Trp Tyr Met Ala Phe Thr Arg Lys Gly Arg Pro Arg	480
145 150 155 160	
aag ggc tcc aag acg cgc cag cat cag cgc gag gtg cac ttc atg aag Lys Gly Ser Lys Thr Arg Gln His Gln Arg Glu Val His Phe Met Lys	528
165 170 175	
cgc ctg ccg cgg ggc cac cac acc acc gag cag agc ctg cgc ttc gag Arg Leu Pro Arg Gly His His Thr Thr Glu Gln Ser Leu Arg Phe Glu	576
180 185 190	
ttc ctc aac tac ccg ccc ttc acg cgc agc ctg cgc ggc agc cag agg Phe Leu Asn Tyr Pro Pro Phe Thr Arg Ser Leu Arg Gly Ser Gln Arg	624
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Thr Gln His Val Arg Glu Gln Ser Leu Val Thr Asp Gln Leu Ser Arg	
35 40 45	

Arg Leu Ile Arg Thr Tyr Gln Leu Tyr Ser Arg Thr Ser Gly Lys His	
50 55 60	

Val Gln Val Leu Ala Asn Lys Arg Ile Asn Ala Met Ala Glu Asp Gly	
65 70 75 80	

Asp Pro Phe Ala Lys Leu Ile Val Glu Thr Asp Thr Phe Gly Ser Arg	
85 90 95	

Val Arg Val Arg Gly Ala Glu Thr Gly Leu Tyr Ile Cys Met Asn Lys	
100 105 110	

Lys Gly Lys Leu Ile Ala Lys Ser Asn Gly Lys Gly Lys Asp Cys Val
115 120 125

Phe Thr Glu Ile Val Leu Glu Asn Asn Tyr Thr Ala Leu Gln Asn Ala
130 135 140

Lys Tyr Glu Gly Trp Tyr Met Ala Phe Thr Arg Lys Gly Arg Pro Arg
145 150 155 160

Lys Gly Ser Lys Thr Arg Gln His Gln Arg Glu Val His Phe Met Lys
165 170 175

Arg Leu Pro Arg Gly His His Thr Thr Glu Gln Ser Leu Arg Phe Glu
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195 200 205

Thr Trp Ala Pro Glu Pro Arg
210 215

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Arg Gln Arg Trp Leu Arg Val Gly Thr Leu Val Leu Ala Leu Thr Gly
20 25 30

acc ttc ctc att ggc ttc ctc ttt ggg tgg ttt ata aaa cct tcc aat 144
Thr Phe Leu Ile Gly Phe Leu Phe Gly Trp Phe Ile Lys Pro Ser Asn
35 40 45

gaa gct act ggt aat gtt tcc cat tct ggc atg aag aag gag ttt ttg 192
Glu Ala Thr Gly Asn Val Ser His Ser Gly Met Lys Lys Glu Phe Leu
50 55 60

cat gaa ttg aag gct gag aac atc aaa aaa ttt tta tac aat ttc aca 240
His Glu Leu Lys Ala Glu Asn Ile Lys Lys Phe Leu Tyr Asn Phe Thr
65 70 75 80

cg aca cca cac ttg gca gga aca caa aat aat ttt gag ctt gca aag 288
 Arg Thr Pro His Leu Ala Gly Thr Gln Asn Asn Phe Glu Leu Ala Lys
 85 90 95

 caa att cat gac cag tgg aaa gaa ttt ggc ctg gat ttg gtt gag tta 336
 Gln Ile His Asp Gln Trp Lys Glu Phe Gly Leu Asp Leu Val Glu Leu
 100 105 110

 tcc cat tac gat gtc ttg ctg tcc tat cca aat aaa act cat cct aac 384
 Ser His Tyr Asp Val Leu Leu Ser Tyr Pro Asn Lys Thr His Pro Asn
 115 120 125

 tat atc tca ata att aat gaa gat gga aat gag att ttc aaa aca tca 432
 Tyr Ile Ser Ile Ile Asn Glu Asp Gly Asn Glu Ile Phe Lys Thr Ser
 130 135 140

 tta tct gaa cag cca ccc cca gga tat gag aat ata tca gat gta gtg 480
 Leu Ser Glu Gln Pro Pro Gly Tyr Glu Asn Ile Ser Asp Val Val
 145 150 155 160

 cca cca tac agt gcc ttc tct cca caa ggg aca cca gag ggt gat cta 528
 Pro Pro Tyr Ser Ala Phe Ser Pro Gln Gly Thr Pro Glu Gly Asp Leu
 165 170 175

 gtg tat gtc aac tat gca cga act gaa gac ttc ttt aaa ctg gaa cgg 576
 Val Tyr Val Asn Tyr Ala Arg Thr Glu Asp Phe Phe Lys Leu Glu Arg
 180 185 190

 gaa atg aag atc agt tgt tct ggg aag att gtg att gcc aga tat ggg 624
 Glu Met Lys Ile Ser Cys Ser Gly Lys Ile Val Ile Ala Arg Tyr Gly
 195 200 205

 aaa gtg ttc aga gga aat atg gtt aaa aat gct caa ctg gca ggg gca 672
 Lys Val Phe Arg Gly Asn Met Val Lys Asn Ala Gln Leu Ala Gly Ala
 210 215 220

 aaa gga atg att ctg tac tca gac cct gct gac tac ttt gtt cct gcg 720
 Lys Gly Met Ile Leu Tyr Ser Asp Pro Ala Asp Tyr Phe Val Pro Ala
 225 230 235 240

 gtg aag tcc tat cca gat ggc tgg aac ctc cct gga ggt ggt gtc caa 768
 Val Lys Ser Tyr Pro Asp Gly Trp Asn Leu Pro Gly Gly Val Gln
 245 250 255

 cgt gga aat gtc tta aat ctt aat ggt gca ggt gac ccg ctc aca cca 816
 Arg Gly Asn Val Leu Asn Leu Asn Gly Ala Gly Asp Pro Leu Thr Pro
 260 265 270

 ggt tac cca gca aat gaa cat gct tat agg cat gag ttg aca aac gct 864
 Gly Tyr Pro Ala Asn Glu His Ala Tyr Arg His Glu Leu Thr Asn Ala
 275 280 285

 gtt ggc ctt cca agt att cct gtc cat cct att gga tat gat gat gca 912
 Val Gly Leu Pro Ser Ile Pro Val His Pro Ile Gly Tyr Asp Asp Ala
 290 295 300

cag aaa ctc tta gaa cac atg ggt ggt cca gca ccc cct gac agt agc Gln Lys Leu Leu Glu His Met Gly Gly Pro Ala Pro Pro Asp Ser Ser 305 310 315 320	960
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gga aac ttt tca aca caa aag gtc aag atg cat att cac tct tac act Gly Asn Phe Ser Thr Gln Lys Val Lys Met His Ile His Ser Tyr Thr 340 345 350	1056
aaa gtg aca aga atc tat aat gtc att ggc acc ctc aaa gga gct ctg Lys Val Thr Arg Ile Tyr Asn Val Ile Gly Thr Leu Lys Gly Ala Leu 355 360 365	1104
gaa cca gac aga tat gtt att ctt gga ggt cac cga gac gct tgg gta Glu Pro Asp Arg Tyr Val Ile Leu Gly Gly His Arg Asp Ala Trp Val 370 375 380	1152
ttt ggt ggc att gac cct cag agt gga gca gct gtt gtt cat gaa att Phe Gly Ile Asp Pro Gln Ser Gly Ala Ala Val Val His Glu Ile 385 390 395 400	1200
gtg cgg agc ttt gga acc ctg aag aag aaa gga cgg agg cct aga agg Val Arg Ser Phe Gly Thr Leu Lys Lys Gly Arg Arg Pro Arg Arg 405 410 415	1248
aca att ttg ttt gca agc tgg gat gca gaa gaa ttt ggc ctt ctt ggt Thr Ile Leu Phe Ala Ser Trp Asp Ala Glu Glu Phe Gly Leu Leu Gly 420 425 430	1296
tct act gag tgg gca gag gaa cat tca aga ctc cta caa gag cga ggt Ser Thr Glu Trp Ala Glu Glu His Ser Arg Leu Leu Gln Glu Arg Gly 435 440 445	1344
gtg gct tat att aat gct gat tct tcc ata gaa gga aat tac act cta Val Ala Tyr Ile Asn Ala Asp Ser Ser Ile Glu Gly Asn Tyr Thr Leu 450 455 460	1392
aga gtt gat tgc aca cca ctg atg tac agc tta gtg tac aac cta aca Arg Val Asp Cys Thr Pro Leu Met Tyr Ser Leu Val Tyr Asn Leu Thr 465 470 475 480	1440
aaa gag ctg caa agc cca gat gaa ggt ttt gaa gga aaa tct ctt tat Lys Glu Leu Gln Ser Pro Asp Glu Gly Phe Glu Gly Lys Ser Leu Tyr 485 490 495	1488
gac agc tgg aaa gaa aag agt cct tca cct gag ttc att gga atg ccc Asp Ser Trp Lys Glu Lys Ser Pro Ser Pro Glu Phe Ile Gly Met Pro 500 505 510	1536
aga att agc aag ctg ggg tct ggc aat gat ttt gaa gtg ttc ttc caa Arg Ile Ser Lys Leu Gly Ser Gly Asn Asp Phe Glu Val Phe Phe Gln 515 520 525	1584
aga ctt gga att gct tca ggc aga gcc cga tat act aaa aat tgg aaa	1632

Arg Leu Gly Ile Ala Ser Gly Arg Ala Arg Tyr Thr Lys Asn Trp Lys			
530	535	540	
act aac aaa gtc agc agc tat cct ctc tat cac agt gtc tat gaa aca			1680
Thr Asn Lys Val Ser Ser Tyr Pro Leu Tyr His Ser Val Tyr Glu Thr			
545	550	555	560
tat gag ctg gta gta aaa ttt tat gac cca aca ttt aaa tac cac ctc			1728
Tyr Glu Leu Val Val Lys Phe Tyr Asp Pro Thr Phe Lys Tyr His Leu			
565	570	575	
act gtg gcc cag gtt cga gga gcg atg gta ttt gaa ctt gcc aat tct			1776
Thr Val Ala Gln Val Arg Gly Ala Met Val Phe Glu Leu Ala Asn Ser			
580	585	590	
ata gtg ctt ccc ttt gac tgc caa agt tat gct gta gct ctg aag aag			1824
Ile Val Leu Pro Phe Asp Cys Gln Ser Tyr Ala Val Ala Leu Lys Lys			
595	600	605	
tat gct gac act atc tac aat att tca atg aaa cat cca caa gaa atg			1872
Tyr Ala Asp Thr Ile Tyr Asn Ile Ser Met Lys His Pro Gln Glu Met			
610	615	620	
aag gct tac atg ata tca ttt gat tca ctg ttt tct gca gtc aat aat			1920
Lys Ala Tyr Met Ile Ser Phe Asp Ser Leu Phe Ser Ala Val Asn Asn			
625	630	635	640
ttt aca gat gtt gca tct aag ttc aat cag aga ctg caa gag tta gac			1968
Phe Thr Asp Val Ala Ser Lys Phe Asn Gln Arg Leu Gln Glu Leu Asp			
645	650	655	
aaa agc aac ccc ata tta ctg aga att atg aat gac cag ctg atg tat			2016
Lys Ser Asn Pro Ile Leu Leu Arg Ile Met Asn Asp Gln Leu Met Tyr			
660	665	670	
ctg gaa cgt gca ttc att gat cct tta ggc tta cca gga agg cct ttc			2064
Leu Glu Arg Ala Phe Ile Asp Pro Leu Gly Leu Pro Gly Arg Pro Phe			
675	680	685	
tac agg cat acc atc tat gct cca agc agc cac aac aag tat gca gga			2112
Tyr Arg His Thr Ile Tyr Ala Pro Ser Ser His Asn Lys Tyr Ala Gly			
690	695	700	
gaa tca ttc cct ggg att tat gat gcc ctt ttt gat ata agt agc aaa			2160
Glu Ser Phe Pro Gly Ile Tyr Asp Ala Leu Phe Asp Ile Ser Ser Lys			
705	710	715	720
gtc aat gct tct aag gcc tgg aac gaa gtg aag aga cag att tct att			2208
Val Asn Ala Ser Lys Ala Trp Asn Glu Val Lys Arg Gln Ile Ser Ile			
725	730	735	
gca acc ttt aca gtg caa gct gca gca gag act ctg agg gaa gta gct			2256
Ala Thr Phe Thr Val Gln Ala Ala Ala Glu Thr Leu Arg Glu Val Ala			
740	745	750	

<211> 752
<212> PRT
<213> Mus musculus

<400> 8

Met Trp Asn Ala Leu Gln Asp Arg Asp Ser Ala Glu Val Leu Gly His
1 5 10 15

Arg Gln Arg Trp Leu Arg Val Gly Thr Leu Val Leu Ala Leu Thr Gly
20 25 30

Thr Phe Leu Ile Gly Phe Leu Phe Gly Trp Phe Ile Lys Pro Ser Asn
35 40 45

Glu Ala Thr Gly Asn Val Ser His Ser Gly Met Lys Lys Glu Phe Leu
50 55 60

His Glu Leu Lys Ala Glu Asn Ile Lys Lys Phe Leu Tyr Asn Phe Thr
65 70 75 80

Arg Thr Pro His Leu Ala Gly Thr Gln Asn Asn Phe Glu Leu Ala Lys
85 90 95

Gln Ile His Asp Gln Trp Lys Glu Phe Gly Leu Asp Leu Val Glu Leu
100 105 110

Ser His Tyr Asp Val Leu Leu Ser Tyr Pro Asn Lys Thr His Pro Asn
115 120 125

Tyr Ile Ser Ile Ile Asn Glu Asp Gly Asn Glu Ile Phe Lys Thr Ser
130 135 140

Leu Ser Glu Gln Pro Pro Pro Gly Tyr Glu Asn Ile Ser Asp Val Val
145 150 155 160

Pro Pro Tyr Ser Ala Phe Ser Pro Gln Gly Thr Pro Glu Gly Asp Leu
165 170 175

Val Tyr Val Asn Tyr Ala Arg Thr Glu Asp Phe Phe Lys Leu Glu Arg
180 185 190

Glu Met Lys Ile Ser Cys Ser Gly Lys Ile Val Ile Ala Arg Tyr Gly
195 200 205

Lys Val Phe Arg Gly Asn Met Val Lys Asn Ala Gln Leu Ala Gly Ala
210 215 220

Lys Gly Met Ile Leu Tyr Ser Asp Pro Ala Asp Tyr Phe Val Pro Ala
225 230 235 240

Val Lys Ser Tyr Pro Asp Gly Trp Asn Leu Pro Gly Gly Val Gln
245 250 255

Arg Gly Asn Val Leu Asn Leu Asn Gly Ala Gly Asp Pro Leu Thr Pro
260 265 270

Gly Tyr Pro Ala Asn Glu His Ala Tyr Arg His Glu Leu Thr Asn Ala
275 280 285

Val Gly Leu Pro Ser Ile Pro Val His Pro Ile Gly Tyr Asp Asp Ala
290 295 300

Gln Lys Leu Leu Glu His Met Gly Gly Pro Ala Pro Pro Asp Ser Ser
305 310 315 320

Trp Lys Gly Gly Leu Lys Val Pro Tyr Asn Val Gly Pro Gly Phe Ala
325 330 335

Gly Asn Phe Ser Thr Gln Lys Val Lys Met His Ile His Ser Tyr Thr
340 345 350

Lys Val Thr Arg Ile Tyr Asn Val Ile Gly Thr Leu Lys Gly Ala Leu
355 360 365

Glu Pro Asp Arg Tyr Val Ile Leu Gly Gly His Arg Asp Ala Trp Val
370 375 380

Phe Gly Gly Ile Asp Pro Gln Ser Gly Ala Ala Val Val His Glu Ile
385 390 395 400

Val Arg Ser Phe Gly Thr Leu Lys Lys Gly Arg Arg Pro Arg Arg
405 410 415

Thr Ile Leu Phe Ala Ser Trp Asp Ala Glu Glu Phe Gly Leu Leu Gly
420 425 430

Ser Thr Glu Trp Ala Glu Glu His Ser Arg Leu Leu Gln Glu Arg Gly
435 440 445

Val Ala Tyr Ile Asn Ala Asp Ser Ser Ile Glu Gly Asn Tyr Thr Leu
450 455 460

Arg Val Asp Cys Thr Pro Leu Met Tyr Ser Leu Val Tyr Asn Leu Thr
465 470 475 480

Lys Glu Leu Gln Ser Pro Asp Glu Gly Phe Glu Gly Lys Ser Leu Tyr
485 490 495

Asp Ser Trp Lys Glu Lys Ser Pro Ser Pro Glu Phe Ile Gly Met Pro
500 505 510

Arg Ile Ser Lys Leu Gly Ser Gly Asn Asp Phe Glu Val Phe Phe Gln
515 520 525

Arg Leu Gly Ile Ala Ser Gly Arg Ala Arg Tyr Thr Lys Asn Trp Lys
530 535 540

Thr Asn Lys Val Ser Ser Tyr Pro Leu Tyr His Ser Val Tyr Glu Thr
545 550 555 560

Tyr Glu Leu Val Val Lys Phe Tyr Asp Pro Thr Phe Lys Tyr His Leu
565 570 575

Thr Val Ala Gln Val Arg Gly Ala Met Val Phe Glu Leu Ala Asn Ser
580 585 590

Ile Val Leu Pro Phe Asp Cys Gln Ser Tyr Ala Val Ala Leu Lys Lys
595 600 605

Tyr Ala Asp Thr Ile Tyr Asn Ile Ser Met Lys His Pro Gln Glu Met
610 615 620

Lys Ala Tyr Met Ile Ser Phe Asp Ser Leu Phe Ser Ala Val Asn Asn
625 630 635 640

Phe Thr Asp Val Ala Ser Lys Phe Asn Gln Arg Leu Gln Glu Leu Asp
645 650 655

Lys Ser Asn Pro Ile Leu Leu Arg Ile Met Asn Asp Gln Leu Met Tyr

660

665

670

Leu Glu Arg Ala Phe Ile Asp Pro Leu Gly Leu Pro Gly Arg Pro Phe
 675 680 685

Tyr Arg His Thr Ile Tyr Ala Pro Ser Ser His Asn Lys Tyr Ala Gly
 690 695 700

Glu Ser Phe Pro Gly Ile Tyr Asp Ala Leu Phe Asp Ile Ser Ser Lys
 705 710 715 720

Val Asn Ala Ser Lys Ala Trp Asn Glu Val Lys Arg Gln Ile Ser Ile
 725 730 735

Ala Thr Phe Thr Val Gln Ala Ala Ala Glu Thr Leu Arg Glu Val Ala
 740 745 750

<210> 9
<211> 2082
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(2082)

<400> 9
atg aag aag gag ttt ttg cat gaa ttg aag gct gag aac atc aaa aaa 48
Met Lys Lys Glu Phe Leu His Glu Leu Lys Ala Glu Asn Ile Lys Lys
1 5 10 15

ttt tta tac aat ttc aca cgg aca cca cac ttg gca gga aca caa aat 96
Phe Leu Tyr Asn Phe Thr Arg Thr Pro His Leu Ala Gly Thr Gln Asn
20 25 30

aat ttt gag ctt gca aag caa att cat gac cag tgg aaa gaa ttt ggc 144
Asn Phe Glu Leu Ala Lys Gln Ile His Asp Gln Trp Lys Glu Phe Gly
35 40 45

ctg gat ttg gtt gag tta tcc cat tac gat gtc ttg ctg tcc tat cca 192
Leu Asp Leu Val Glu Leu Ser His Tyr Asp Val Leu Leu Ser Tyr Pro
50 55 60

aat aaa act cat cct aac tat atc tca ata att aat gaa gat gga aat 240
Asn Lys Thr His Pro Asn Tyr Ile Ser Ile Ile Asn Glu Asp Gly Asn
65 70 75 80

gag att ttc aaa aca tca tta tct gaa cag cca ccc cca gga tat gag 288
Glu Ile Phe Lys Thr Ser Leu Ser Glu Gln Pro Pro Pro Gly Tyr Glu
85 90 95

aat ata tca gat gta gtg cca cca tac agt gcc ttc tct cca caa ggg Asn Ile Ser Asp Val Val Pro Pro Tyr Ser Ala Phe Ser Pro Gln Gly 100 105 110	336
aca cca gag ggt gat cta gtg tat gtc aac tat gca cga act gaa gac Thr Pro Glu Gly Asp Leu Val Tyr Val Asn Tyr Ala Arg Thr Glu Asp 115 120 125	384
ttc ttt aaa ctg gaa cgg gaa atg aag atc agt tgt tct ggg aag att Phe Phe Lys Leu Glu Arg Glu Met Lys Ile Ser Cys Ser Gly Lys Ile 130 135 140	432
gtg att gcc aga tat ggg aaa gtg ttc aga gga aat atg gtt aaa aat Val Ile Ala Arg Tyr Gly Lys Val Phe Arg Gly Asn Met Val Lys Asn 145 150 155 160	480
gct caa ctg gca ggg gca aaa gga atg att ctg tac tca gac cct gct Ala Gln Leu Ala Gly Ala Lys Gly Met Ile Leu Tyr Ser Asp Pro Ala 165 170 175	528
gac tac ttt gtt cct gcg gtg aag tcc tat cca gat ggc tgg aac ctc Asp Tyr Phe Val Pro Ala Val Lys Ser Tyr Pro Asp Gly Trp Asn Leu 180 185 190	576
cct gga ggt ggt gtc caa cgt gga aat gtc tta aat ctt aat ggt gca Pro Gly Gly Val Gln Arg Gly Asn Val Leu Asn Leu Asn Gly Ala 195 200 205	624
ggt gac ccg ctc aca cca ggt tac cca gca aat gaa cat gct tat agg Gly Asp Pro Leu Thr Pro Gly Tyr Pro Ala Asn Glu His Ala Tyr Arg 210 215 220	672
cat gag ttg aca aac gct gtt ggc ctt cca agt att cct gtc cat cct His Glu Leu Thr Asn Ala Val Gly Leu Pro Ser Ile Pro Val His Pro 225 230 235 240	720
att gga tat gat gca cag aaa ctc tta gaa cac atg ggt ggt cca Ile Gly Tyr Asp Asp Ala Gln Lys Leu Leu Glu His Met Gly Gly Pro 245 250 255	768
gca ccc cct gac agt agc tgg aag gga gga tta aaa gtg cct tac aac Ala Pro Pro Asp Ser Ser Trp Lys Gly Gly Leu Lys Val Pro Tyr Asn 260 265 270	816
gtg gga cct ggc ttt gct gga aac ttt tca aca caa aag gtc aag atg Val Gly Pro Gly Phe Ala Gly Asn Phe Ser Thr Gln Lys Val Lys Met 275 280 285	864
cat att cac tct tac act aaa gtg aca aga atc tat aat gtc att ggc His Ile His Ser Tyr Thr Lys Val Thr Arg Ile Tyr Asn Val Ile Gly 290 295 300	912
acc ctc aaa gga gct ctg gaa cca gac aga tat gtt att ctt gga ggt Thr Leu Lys Gly Ala Leu Glu Pro Asp Arg Tyr Val Ile Leu Gly Gly 305 310 315 320	960
cac cga gac gct tgg gta ttt ggt ggc att gac cct cag agt gga gca	1008

His Arg Asp Ala Trp Val Phe Gly Gly Ile Asp Pro Gln Ser Gly Ala			
325	330	335	
gct gtt gtt cat gaa att gtg cgg agc ttt gga acc ctg aag aag aaa			1056
Ala Val Val His Glu Ile Val Arg Ser Phe Gly Thr Leu Lys Lys Lys			
340	345	350	
gga cgg agg cct aga agg aca att ttg ttt gca agc tgg gat gca gaa			1104
Gly Arg Arg Pro Arg Arg Thr Ile Leu Phe Ala Ser Trp Asp Ala Glu			
355	360	365	
gaa ttt ggc ctt ctt ggt tct act gag tgg gca gag gaa cat tca aga			1152
Glu Phe Gly Leu Leu Gly Ser Thr Glu Trp Ala Glu Glu His Ser Arg			
370	375	380	
ctc cta caa gag cga ggt gtg gct tat att aat gct gat tct tcc ata			1200
Leu Leu Gln Glu Arg Gly Val Ala Tyr Ile Asn Ala Asp Ser Ser Ile			
385	390	395	400
gaa gga aat tac act cta aga gtt gat tgc aca cca ctg atg tac agc			1248
Glu Gly Asn Tyr Thr Leu Arg Val Asp Cys Thr Pro Leu Met Tyr Ser			
405	410	415	
tta gtg tac aac cta aca aaa gag ctg caa agc cca gat gaa ggt ttt			1296
Leu Val Tyr Asn Leu Thr Lys Glu Leu Gln Ser Pro Asp Glu Gly Phe			
420	425	430	
gaa gga aaa tct ctt tat gac agc tgg aaa gaa aag agt cct tca cct			1344
Glu Gly Lys Ser Leu Tyr Asp Ser Trp Lys Glu Lys Ser Pro Ser Pro			
435	440	445	
gag ttc att gga atg ccc aga att agc aag ctg ggg tct ggc aat gat			1392
Glu Phe Ile Gly Met Pro Arg Ile Ser Lys Leu Gly Ser Gly Asn Asp			
450	455	460	
ttt gaa gtg ttc ttc caa aga ctt gga att gct tca ggc aga gcc cga			1440
Phe Glu Val Phe Phe Gln Arg Leu Gly Ile Ala Ser Gly Arg Ala Arg			
465	470	475	480
tat act aaa aat tgg aaa act aac aaa gtc agc agc tat cct ctc tat			1488
Tyr Thr Lys Asn Trp Lys Thr Asn Lys Val Ser Ser Tyr Pro Leu Tyr			
485	490	495	
cac agt gtc tat gaa aca tat gag ctg gta gta aaa ttt tat gac cca			1536
His Ser Val Tyr Glu Thr Tyr Glu Leu Val Val Lys Phe Tyr Asp Pro			
500	505	510	
aca ttt aaa tac cac ctc act gtg gcc cag gtt cga gga gcg atg gta			1584
Thr Phe Lys Tyr His Leu Thr Val Ala Gln Val Arg Gly Ala Met Val			
515	520	525	
ttt gaa ctt gcc aat tct ata gtg ctt ccc ttt gac tgc caa agt tat			1632
Phe Glu Leu Ala Asn Ser Ile Val Leu Pro Phe Asp Cys Gln Ser Tyr			
530	535	540	
gct gta gct ctg aag aag tat gct gac act atc tac aat att tca atg			1680
Ala Val Ala Leu Lys Lys Tyr Ala Asp Thr Ile Tyr Asn Ile Ser Met			

545	550	555	560	
aaa cat cca caa gaa atg aag gct tac atg ata tca ttt gat tca ctg Lys His Pro Gln Glu Met Lys Ala Tyr Met Ile Ser Phe Asp Ser Leu 565	570	575		1728
ttt tct gca gtc aat aat ttt aca gat gtt gca tct aag ttc aat cag Phe Ser Ala Val Asn Asn Phe Thr Asp Val Ala Ser Lys Phe Asn Gln 580	585	590		1776
aga ctg caa gag tta gac aaa agc aac ccc ata tta ctg aga att atg Arg Leu Gln Glu Leu Asp Lys Ser Asn Pro Ile Leu Leu Arg Ile Met 595	600	605		1824
aat gac cag ctg atg tat ctg gaa cgt gca ttc att gat cct tta ggc Asn Asp Gln Leu Met Tyr Leu Glu Arg Ala Phe Ile Asp Pro Leu Gly 610	615	620		1872
tta cca gga agg cct ttc tac agg cat acc atc tat gct cca agc agc Leu Pro Gly Arg Pro Phe Tyr Arg His Thr Ile Tyr Ala Pro Ser Ser 625	630	635	640	1920
cac aac aag tat gca gga gaa tca ttc cct ggg att tat gat gcc ctt His Asn Lys Tyr Ala Gly Glu Ser Phe Pro Gly Ile Tyr Asp Ala Leu 645	650	655		1968
ttt gat ata agt agc aaa gtc aat gct tct aag gcc tgg aac gaa gtg Phe Asp Ile Ser Ser Lys Val Asn Ala Ser Lys Ala Trp Asn Glu Val 660	665	670		2016
aag aga cag att tct att gca acc ttt aca gtg caa gct gca gca gag Lys Arg Gln Ile Ser Ile Ala Thr Phe Thr Val Gln Ala Ala Ala Glu 675	680	685		2064
act ctg agg gaa gta gct Thr Leu Arg Glu Val Ala 690				2082

<210> 10
<211> 694
<212> PRT
<213> *Mus musculus*

<400> 10

Met Lys Lys Glu Phe Leu His Glu Leu Lys Ala Glu Asn Ile Lys Lys
1 5 10 15

Phe Leu Tyr Asn Phe Thr Arg Thr Pro His Leu Ala Gly Thr Gln Asn
20 25 30

Asn Phe Glu Leu Ala Lys Gln Ile His Asp Gln Trp Lys Glu Phe Gly
35 40 45

Leu Asp Leu Val Glu Leu Ser His Tyr Asp Val Leu Leu Ser Tyr Pro
50 55 60

Asn Lys Thr His Pro Asn Tyr Ile Ser Ile Ile Asn Glu Asp Gly Asn
65 70 75 80

Glu Ile Phe Lys Thr Ser Leu Ser Glu Gln Pro Pro Pro Gly Tyr Glu
85 90 95

Asn Ile Ser Asp Val Val Pro Pro Tyr Ser Ala Phe Ser Pro Gln Gly
100 105 110

Thr Pro Glu Gly Asp Leu Val Tyr Val Asn Tyr Ala Arg Thr Glu Asp
115 120 125

Phe Phe Lys Leu Glu Arg Glu Met Lys Ile Ser Cys Ser Gly Lys Ile
130 135 140

Val Ile Ala Arg Tyr Gly Lys Val Phe Arg Gly Asn Met Val Lys Asn
145 150 155 160

Ala Gln Leu Ala Gly Ala Lys Gly Met Ile Leu Tyr Ser Asp Pro Ala
165 170 175

Asp Tyr Phe Val Pro Ala Val Lys Ser Tyr Pro Asp Gly Trp Asn Leu
180 185 190

Pro Gly Gly Val Gln Arg Gly Asn Val Leu Asn Leu Asn Gly Ala
195 200 205

Gly Asp Pro Leu Thr Pro Gly Tyr Pro Ala Asn Glu His Ala Tyr Arg
210 215 220

His Glu Leu Thr Asn Ala Val Gly Leu Pro Ser Ile Pro Val His Pro
225 230 235 240

Ile Gly Tyr Asp Asp Ala Gln Lys Leu Leu Glu His Met Gly Gly Pro
245 250 255

Ala Pro Pro Asp Ser Ser Trp Lys Gly Gly Leu Lys Val Pro Tyr Asn
260 265 270

Val Gly Pro Gly Phe Ala Gly Asn Phe Ser Thr Gln Lys Val Lys Met
275 280 285

His Ile His Ser Tyr Thr Lys Val Thr Arg Ile Tyr Asn Val Ile Gly
290 295 300

Thr Leu Lys Gly Ala Leu Glu Pro Asp Arg Tyr Val Ile Leu Gly Gly
305 310 315 320

His Arg Asp Ala Trp Val Phe Gly Gly Ile Asp Pro Gln Ser Gly Ala
325 330 335

Ala Val Val His Glu Ile Val Arg Ser Phe Gly Thr Leu Lys Lys Lys
340 345 350

Gly Arg Arg Pro Arg Arg Thr Ile Leu Phe Ala Ser Trp Asp Ala Glu
355 360 365

Glu Phe Gly Leu Leu Gly Ser Thr Glu Trp Ala Glu Glu His Ser Arg
370 375 380

Leu Leu Gln Glu Arg Gly Val Ala Tyr Ile Asn Ala Asp Ser Ser Ile
385 390 395 400

Glu Gly Asn Tyr Thr Leu Arg Val Asp Cys Thr Pro Leu Met Tyr Ser
405 410 415

Leu Val Tyr Asn Leu Thr Lys Glu Leu Gln Ser Pro Asp Glu Gly Phe
420 425 430

Glu Gly Lys Ser Leu Tyr Asp Ser Trp Lys Glu Lys Ser Pro Ser Pro
435 440 445

Glu Phe Ile Gly Met Pro Arg Ile Ser Lys Leu Gly Ser Gly Asn Asp
450 455 460

Phe Glu Val Phe Phe Gln Arg Leu Gly Ile Ala Ser Gly Arg Ala Arg
465 470 475 480

Tyr Thr Lys Asn Trp Lys Thr Asn Lys Val Ser Ser Tyr Pro Leu Tyr
485 490 495

His Ser Val Tyr Glu Thr Tyr Glu Leu Val Val Lys Phe Tyr Asp Pro

500

505

510

Thr Phe Lys Tyr His Leu Thr Val Ala Gln Val Arg Gly Ala Met Val
515 520 525

Phe Glu Leu Ala Asn Ser Ile Val Leu Pro Phe Asp Cys Gln Ser Tyr
530 535 540

Ala Val Ala Leu Lys Lys Tyr Ala Asp Thr Ile Tyr Asn Ile Ser Met
545 550 555 560

Lys His Pro Gln Glu Met Lys Ala Tyr Met Ile Ser Phe Asp Ser Leu
565 570 575

Phe Ser Ala Val Asn Asn Phe Thr Asp Val Ala Ser Lys Phe Asn Gln
580 585 590

Arg Leu Gln Glu Leu Asp Lys Ser Asn Pro Ile Leu Leu Arg Ile Met
595 600 605

Asn Asp Gln Leu Met Tyr Leu Glu Arg Ala Phe Ile Asp Pro Leu Gly
610 615 620

Leu Pro Gly Arg Pro Phe Tyr Arg His Thr Ile Tyr Ala Pro Ser Ser
625 630 635 640

His Asn Lys Tyr Ala Gly Glu Ser Phe Pro Gly Ile Tyr Asp Ala Leu
645 650 655

Phe Asp Ile Ser Ser Lys Val Asn Ala Ser Lys Ala Trp Asn Glu Val
660 665 670

Lys Arg Gln Ile Ser Ile Ala Thr Phe Thr Val Gln Ala Ala Ala Glu
675 680 685

Thr Leu Arg Glu Val Ala
690

<210> 11
<211> 45
<212> DNA
<213> Clostridium tetani

<220>

<221> CDS
<222> (1)..(45)

<400> 11
cag tac atc aaa gct aac tcc aaa ttc atc ggt atc acc gag ctg 45
Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu
1 5 10 15

<210> 12
<211> 15
<212> PRT
<213> Clostridium tetani

<400> 12

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu
1 5 10 15

<210> 13
<211> 63
<212> DNA
<213> Clostridium tetani

<220>
<221> CDS
<222> (1)..(63)

<400> 13
ttc aac aac ttc acc gta agc ttc tgg ctg cgt gtt ccg aaa gtt agc 48
Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser
1 5 10 15

gct agc cac ctg gaa 63
Ala Ser His Leu Glu
20

<210> 14
<211> 21
<212> PRT
<213> Clostridium tetani

<400> 14

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser
1 5 10 15

Ala Ser His Leu Glu
20

<210> 15
<211> 25
<212> PRT

<213> artificial sequence

<220>

<223> Fusion of tetanus toxoid epitope and PSM

<400> 15

Gln Glu Arg Gly Val Glu Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Leu Arg Val Asp Cys Thr
20 25

<210> 16

<211> 25

<212> PRT

<213> artificial sequence

<220>

<223> Fusion of tetanus toxoid epitope and PSM

<400> 16

Ala Val Val Leu Arg Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Leu Glu Met Lys Thr Tyr
20 25

<210> 17

<211> 25

<212> PRT

<213> artificial sequence

<220>

<223> Fusion of tetanus toxoid epitope and PSM

<400> 17

Met Phe Leu Glu Arg Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Leu His Val Ile Tyr Ala
20 25

<210> 18

<211> 31

<212> PRT

<213> artificial sequence

<220>

<223> Fusion of tetanus toxoid epitope and PSM

<400> 18

Asn Ser Arg Leu Leu Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg
1 5 10 15

Val Pro Lys Val Ser Ala Ser His Leu Glu Val Asp Cys Thr Pro

20

25

30

<210> 19
<211> 31
<212> PRT
<213> artificial sequence

<220>
<223> Fusion of tetanus toxoid epitope and PSM

<400> 19

Val Val Leu Arg Lys Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg
1 5 10 15

Val Pro Lys Val Ser Ala Ser His Leu Glu Ser Phe Asp Ser Leu
20 25 30

<210> 20
<211> 31
<212> PRT
<213> artificial sequence

<220>
<223> Fusion of tetanus toxoid epitope and PSM

<400> 20

Leu Met Phe Leu Glu Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg
1 5 10 15

Val Pro Lys Val Ser Ala Ser His Leu Glu Pro Ser Ser His Asn
20 25 30

<210> 21
<211> 18
<212> DNA
<213> artificial sequence

<220>
<223> Artificial His tag

<220>
<221> CDS
<222> (1)...(18)

<400> 21
cat cat cat cat cat cat 18
His His His His His His
1 5

<210> 22
<211> 6
<212> PRT
<213> artificial sequence
<400> 22

His His His His His His
1 5

<210> 23
<211> 42
<212> DNA
<213> artificial sequence
<220>
<223> Artificial His tag

<220>
<221> CDS
<222> (1)...(42)

<400> 23
atg aaa cac caa cac caa cat caa cat caa cat caa cat caa
Met Lys His Gln His Gln His Gln His Gln His Gln His Gln
1 5 10

42

<210> 24
<211> 14
<212> PRT
<213> artificial sequence

<400> 24

Met Lys His Gln His Gln His Gln His Gln His Gln His Gln
1 5 10

<210> 25
<211> 69
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(69)

<400> 25
atg gat gca atg aag aga ggg ctc tgc tgt gtg ctg ctg ctg tgt gga
Met Asp Ala Met Lys Arg Gly Leu Cys Cys Val Leu Leu Leu Cys Gly
1 5 10 15

48

gca gtc ttc gtt tcg ccc agc
Ala Val Phe Val Ser Pro Ser
20

69

<210> 26
<211> 23
<212> PRT
<213> Mus musculus

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<400> 26

Met Asp Ala Met Lys Arg Gly Leu Cys Cys Val Leu Leu Leu Cys Gly
1 5 10 15

Ala Val Phe Val Ser Pro Ser
20

<210> 27
<211> 33
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(33)

<400> 27
gaa caa aaa ctc atc tca gaa gag gat ctg aat
Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn
1 5 10

33

<210> 28
<211> 11
<212> PRT
<213> Homo sapiens

<400> 28

Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn
1 5 10

<210> 29
<211> 75
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(75)

<400> 29
atg aag gat tcc tgc atc act gtg atg gcc atg gcg ctg ctg tct ggg
Met Lys Asp Ser Cys Ile Thr Val Met Ala Met Ala Leu Leu Ser Gly
1 5 10 15

48

ttc ttt ttc ttc gcg ccg gcc tcg agc
Phe Phe Phe Ala Pro Ala Ser Ser
20 25

75

<210> 30
<211> 25

<212> PRT
<213> Homo sapiens

<400> 30

Met Lys Asp Ser Cys Ile Thr Val Met Ala Met Ala Leu Leu Ser Gly
1 5 10 15

Phe Phe Phe Phe Ala Pro Ala Ser Ser
20 25

<210> 31
<211> 60
<212> DNA
<213> Mus musculus

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<220>
<221> CDS
<222> (1)..(60)

<400> 31

atg aga agg atg ctt ctg cac ttg agt gtt ctg act ctc agc tgt gtc 48
Met Arg Arg Met Leu Leu His Leu Ser Val Leu Thr Leu Ser Cys Val
1 5 10 15

tgg gcc act gcc 60
Trp Ala Thr Ala
20

<210> 32
<211> 20
<212> PRT
<213> Mus musculus

<400> 32

Met Arg Arg Met Leu Leu His Leu Ser Val Leu Thr Leu Ser Cys Val
1 5 10 15

Trp Ala Thr Ala
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<400> 33

Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala
1 5 10 15

Pro Asp Thr Arg
20

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